UNITED STATES DEPARTMENT OF AGRICULTURE
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BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

WASHINGTON
211 Agric. Bldg., Colo. A & M
Fort Collins, Colorado
December 29, 1945

To: Dr. F. C. Craighead, In Charge, Forest Insect Investigations

From: N. D. Wygant, Entomologist in Charge, Fort Collins, Colorado

Subject: "Observations on the Spruce Budworm in Colorado and the Medicine Bow National Forest in Wyoming-1945"-- A Report by W. D. Buchanan

Enclosed are two copies of a report of the above title that is self-explanatory. Copies of this report are being sent to the Regional Forester and Messrs. Brown, Keen, Furniss and Evenden.

The report contains little factual data on the losses caused by the spruce budworm and the amount of infested area. A more detailed survey was not possible with the limited time available. Principally, it shows the extensiveness of the budworm infestations. The survey also permitted Mr. Buchanan to become better acquainted with the problem and forest conditions.

We anticipate less injury in 1946 by the budworm on the Roosevelt and Medicine Bow National Forests and Rocky Mountain National Park because of the big reduction in budworm population in 1945 resulting from the freezing of the new growth on the Douglas fir. Whether or not the population will again build up during the next few years remains to be seen.

In the central and southern part of Colorado the 1945 needle growth was not killed by the June freeze. For this reason we anticipate that severe injury will again occur in 1946.

To Dr. Craighead in duplicate.
cc-Regional Forester (2)
Keen (1)
Furniss (1)
Evenden (1)
Brown (1)

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Observations on the Spruce Budworm in Colorado and the Medicine Bow National Forest in Wyoming 1945

The spruce budworm Archips fumiferana is native to the Rocky Mountain region where it causes variable amounts of damage depending upon its population. The host trees in the order of their preference are: Douglas fir, white and alpine fir, blue spruce and Engelmann spruce. Ponderosa pine is attacked by a variety of A. fumiferana that seems to be limited to this host. A very serious feature about the feeding habits of A. fumiferana is the fact that it attacks trees of all age groups with the result that all host trees are weakened or killed in areas with epidemic outbreaks. There is considerable loss to the Christmas tree industry in areas where budworm populations are only moderately high because it is not possible to sell trees that are partly defoliated.

The information contained in this report on the damage caused by Archips fumiferana in 1945 in the forests of Colorado and the Medicine Bow in Wyoming was obtained from Forest Service personnel plus personal observations on a very small part of the total forest area. The writer realizes that a survey made in this manner is certain to contain errors, and it is quite probable that notable damage occurs in many areas that were not visited. The observations in the Rocky Mountain National Park and along the "front range" of the Pike, San Isabel and Roosevelt Forests were made in July while budworm larvae and pupae were being collected to study their parasites. The Medicine Bow was visited by the writer August 14-17 and by Dr. N. D. Wygant and Mr. T. T. Terrell November 30. Other forests in Colorado were visited between August 23 to September 8. The budworm population in parts of Colorado seems to be on the decline from what may be a number of factors. A severe cold spell in mid-June 1945 killed a large part of the Douglas fir buds which seemed to affect the survival of budworm larvae that were inside the buds at the time. The results from the survey follow:

Grand Mesa

Headquarters at Grand Junction and Rangers contacted reported that very light injury was being caused by budworm. A light infestation was noted in the vicinity of the Ward Ranger Station but it was causing very little damage to the alpine fir upon which it was feeding. This was confirmed by observations made along and adjacent to Colorado State Highway 65 which was followed from the junction with U. S. 6 and 24 to the Mesa Lakes Ranger Station and Ward Lake Ranger Station then north to Colburn, Hightower Ranger Station and returning to U. S. 6 and 24 at Silt.

Gunnison

The headquarters at Gunnison and the ranger at Crested Butte reported that they knew of no budworm injury on the forest. This was confirmed by observation made along and adjacent to Colorado State Route 135 starting at U.S. 50 at Gunnison north to Almont, Crested Butte and west to the forest boundary and beyond through Somerset, Paonia to Delta. It is understood of course that there were no host trees for the budworm except in the higher areas.

Medicine Bow

The headquarters at Laramie reported that there had been an infestation on Sheep Mountain a few years ago and a possible infestation in the vicinity of Battle. Observations made on Sheep Mountain by Dr. Wygant showed that budworms have caused considerable defoliation and together with bark beetles have killed a considerable amount of the Douglas fir. The writer observed some dead Douglas fir on the north slope of Sheep Mountain that appeared to have been killed some years ago by the budworm. In addition to Sheep Mountain, observations were made in the vicinity of the Keystone Ranger Station and west along Colorado State Highway 130 past the Centennial and Brush Creek Ranger Station to State Route 230 then south on 230 to Encampment and from there southwest on county roads through Battle, past the Sandstone Ranger Station to Steamboat Springs, Colorado. Very little evidence of budworm activity was noted along the route from Sheep Mountain. Considerable numbers of dead and dying Engelmann spruce were noted but it appears that it was from causes other than insect activity.

Montezuma

Very little work was done on the Montezuma due to the fact that the supervisor at Cortez stated that he was well acquainted with spruce budworm damage from previous experience on the Roosevelt and he had just been over the forest without seeing any indication of activity. Considerable damage was noted in ponderosa pine by what appeared to be a

disease in the southern part of the forest. Many trees were losing part or all of their needles and it appeared that many would die.

Pike

The headquarters at Colorado Springs reported that they knew of no infestations that were causing severe damage. The ranger at Buffalo Creek reported injury in his district as did the ranger at Lake George. Observations made along Colorado State Route 160 south from Nederland to Idaho Springs then east on U. S. 40 to Bergen Park, from there south on State 73 through Evergreen, Conifer Junction, Shaffers Crossing to Buffalo Creek revealed that pockets of various size were moderately injured in the vicinity of Evergreen and about 4,000 acres were injured more or less seriously in the vicinity of the Buffalo Creek Ranger Station. South from Buffalo Creek through Deckers, West Creek, Woodland Park to Colorado Springs showed light infestations in Douglas fir, blue spruce and white fir. Ponderosa pine was moderately infested in the vicinity of Woodland Park. Very little evidence of infestation was noted between Shaffers Crossing and Fairplay along and adjacent to U. S. Highway 285. The rangers at Bailey and Fairplay reported no budworm injury in their districts. In the Lake George Ranger District damage was heavy on about 1,000 acres in the Puliver Mountain area and a similar amount of damage in the Wagon Tongue Gulch area. A great deal of ponderosa pine was dying in the Blue Mountain area of the Lake George District from a disease which was killing both old and young trees. A few bark beetles of a secondary character were found in a couple of trees but the population was far too light to have hastened the death of the trees they were in.

Rio Grande

Headquarters at Monte Vista reported budworm damage in the Saguache District but little or no infestation was known in other areas. Observation made from U.S. 285 between Monte Vista and Salida and on local roads leading both east and west showed that budworms were causing serious damage to about 22,000 acres on both slopes of the San Luis Valley north of Villagrove. Tree growth on the east side of the valley is limited to a narrow strip about 1/4 to 1/2 mile wide for a distance of about 25 miles. Injury on the west side of the valley was heavy in an area ranging from about 1/2 to 3 miles in width and approximately 10miles in length, the north end reaching almost to Poncha Pass. There are plenty of favorable host trees adjacent to the area with heavy budworm injury and it is quite probable that damage will expand toward the west. The infestation in the Rio Grande appears to be of recent origin because old needles seem to have little injury on them and there are very few dead trees.

Roosevelt

Budworm infestations have caused considerable damage for several years in most of the area east of the Continental Divide. Some of the infestations such as that along the Redstone Creek drainage area developed large populations a few years ago and then more or less disappeared. Current infestations that have caused heavy defoliation in Douglas fir have been noted in much of the area drained by the North Fork of the Thompson River; also, southwest from Estes Park for a distance of several miles; west from Peaceful Valley for several miles and the north slopes of several canyons in the Boulder district. Pockets of various size are distributed over most of the east slope of the forest. Thousands of trees in the forest have been killed by budworms and many more are seriously weakened.

Rocky Mountain National Park

Rocky Mountain National Park, which contains 405 square miles, is one of the most popular areas in the United States for tourists who come from near and far to enjoy the invigorating atmosphere, beautiful mountains, forests and fishing. The spruce budworm or any other factor that would mar the natural beauty of the area would be considered serious. Unfortunately, this area is being damaged by budworm populations that have built up in the Fall River drainage to a point where a high percent of the needles on Douglas fir have been destroyed in the Endovalley section as well as other areas closer to the village of Estes Park. Some defoliation has taken place above the Moraine Park area as well as other parts of the Thompson River drainage.

Routt

The headquarters at Steamboat Springs stated they knew of no budworm infestations on the forest. Very little evidence of budworm injury was noted in observation made along and adjacent to Colorado State Highway 129 from the Wyoming line at Slater south through Columbine, Hahns Peak, to Steamboat Springs. The area west on Colorado Highway 84 appears to have typical budworm injury when viewed from U. S. 40 but inspection showed that the discoloration has been caused by bark beetle activity. There was no injury noted from Muddy Pass north on Colorado Route 14 and east to Rand on 308 nor was injury noted from Gould through Cameron Pass, and other points, east along Colorado Route 14.

San Isabel

The headquarters at Pueblo stated budworm injury was more or less serious on the entire front range of the forest. Observations verified this and also a heavy infestation was noted on the east slope of the Sangre De Christe range from west of Pleasanton south through Westcliffe to Bradford. The infestation is causing more damage on each end of the area than it is through the middle. There are approximately 21,000

acres infested in this one slope. A very destructive infestation is working in the LaVeta Ranger District south of the town of LaVeta. There is some cutting in progress to salvage as much as possible. It was of interest to note that the budworm population was more or less the same on Douglas fir and alpine fir. However, the alpine fir has more foliage and withstood the feeding much better than Douglas fir. From Rye north through San Isabel City, Beulah, Ilse to Rockvale, there was a more or less general infestation with heavier population in the vicinity of San Isabel City and Beulah. In this area there are about 15,000 acres with notable damage.

Uncompahgre

The headquarters at Delta stated there was considerable budworm damage on the 25 mile mesa southwest of Delta. Damage was also reported from a smaller area in the southeast part of the forest that extends onto public domain. Observations made on the 25 mile mesa show there are approximately 12,000 acres with heavy damage but bark beetle damage is far more serious. The barkbeetle and budworm combination have killed a very large number of trees to date and unless something checks the attack it is quite probable there will be very few trees other than aspen that will survive. Logging operations are trying to salvage some of the dead and dying trees but they are not close to cutting the trees as fast as they are killed by insects. Trees that are not sawed within about 3 years after they are killed weather check so badly they are of little value for lumber even though they are solid otherwise.

White River

Headquarters at Glenwood Springs reported that budworms were present on the forest but they were of minor importance compared to the damage being done by bark beetles. Observations made between New Castle, Buford, Pyramid, Willow Creek and Hayden verified this report. A few budworms were found on Engelmann spruce in the area between New Castle and Buford but they were not causing much damage and there was less injury in the other areas mentioned above. Light infestations of the budworm have been reported on alpine fir on Clinetop Mesa and on Douglas fir on Derby Mesa. Barkbeetle injury of a very serious character is killing spruce at a rate that has to be seen to be appreciated. Salvage for lumber purposes is far behind the trees that have been killed. At the present time most of the larger trees have been destroyed and many as small as 6 inches d.b.h. are being attacked.

Acknowledgments: The writer wishes to express his thanks to the Forest Supervisors and Rangers for their fine cooperation and information on budworm infestations in their respective areas.

Submitted by,

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Approved by,

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